

What is claimed is:

Sub A1
1. A method of searching multimedia data comprising:

a1) receiving at least one reference multimedia data selected by a user, wherein the reference multimedia data represents a specified multimedia data to be searched; and

b1) searching for the specified multimedia data utilizing features and feature elements of the respective features included in said at least one reference multimedia data, by considering a degree of affect each feature and each feature elements should have in the search.

2. A method of claim 1, wherein in b1), searching for the specified multimedia data utilizing a combination of features and feature elements of the respective features included in said at least one reference multimedia data, wherein each feature has a feature weight and each feature element has a feature element weight.

3. A method of claim 2, wherein in a1) a plurality of reference multimedia data are selected by the user, and wherein b1) comprises:

a2) measuring the similarities of features included in the plurality of reference multimedia data;

b2) determining weights of each feature according to the measured similarities of the features in a2);

c2) measuring the similarities of the feature elements in each feature included in the plurality of reference multimedia data;

5 d2) determining weights of each feature elements in respective features according to the measured similarities of the feature elements in c2); and

e2) searching for the specified multimedia data utilizing features and feature elements included in the plurality of reference multimedia data, in consideration of the updated features weights and feature element weights.

Sub A2/ 4. A method of claim 3, further comprising terminating the search if the user is satisfied with the result of the search, otherwise the method comprising:

15 f1) receiving at least one other reference multimedia data selected from among the resultant images of the search, wherein said at least one other reference multimedia data is determined to be similar to the specified multimedia data;

20 g1) measuring the similarities of features included in the plurality of reference multimedia data and said at least one other reference multimedia data;

h1) determining and updating weights of each feature according to the measured similarities of the features in g1);

25 i1) measuring the similarities of the feature elements in each feature included in the plurality of reference multimedia

data and said at least one other reference multimedia data;

j1) determining and updating weights of each feature elements in respective features according to the measured similarities of the feature elements in i1); and

5 k1) re-searching for the specified multimedia data utilizing features and feature elements included in the plurality of reference multimedia data and in said at least one other reference multimedia data, in consideration of the updated features weights in h1) and feature element weights in j1).

5. A method of claim 4, further comprising:

11) receiving at least one dissimilar multimedia data selected from among the resultant images of the search, wherein said at least one dissimilar multimedia data is determined to be
15 dissimilar to the specified multimedia data;

m1) measuring the dissimilarities of features included in the plurality of reference multimedia data and said at least one dissimilar multimedia data;

20 n1) measuring the dissimilarities of the feature elements in each feature included in the plurality of reference multimedia data and said at least one dissimilar multimedia data; and

wherein in h1) determining and updating weights of each feature elements in respective features according to the measured dissimilarities of the feature elements in g1 and m1);

25 wherein in j1) determining and updating weights of each

feature elements in respective features according to the measured dissimilarities of the feature elements in i1) and n1); and

wherein in k1) re-searching for the specified multimedia data utilizing features and feature elements included in the plurality of reference multimedia data, in said at least one other reference multimedia data and in said at least one dissimilar data, in consideration of the updated features weights in h1) and feature element weights in j1).

6. A method of claim 3, further comprising terminating the search if the user is satisfied with the result of the search, otherwise the method comprising:

f2) receiving at least one dissimilar data multimedia data selected from among the resultant images of the search, wherein said at least one dissimilar data multimedia data is determined to be dissimilar to the specified multimedia data;

g2) measuring the dissimilarities of features included in the plurality of reference multimedia data and said at least one dissimilar data multimedia data;

h2) determining and updating weights of each feature according to the measured dissimilarities of the features in g2);

i2) measuring the dissimilarities of the feature elements in each feature included in the plurality of reference multimedia data and said at least one dissimilar data multimedia data;

j2) determining and updating weights of each feature

elements in respective features according to the measured dissimilarities of the feature elements in i2); and

5 k2) re-searching for the specified multimedia data utilizing features and feature elements included in the plurality of reference multimedia data and in said at least one dissimilar data multimedia data, in consideration of the updated features weights in h2) and feature element weights in j2).

10 7. A method of claim 2, wherein in a1) one reference multimedia data is selected by the user, and wherein b) comprises searching for the specified multimedia data utilizing features and feature elements of the respective features included in said reference multimedia data, wherein each features has a feature weight and each feature element has a feature element weight.

15 8. A method of claim 7, further comprising terminating the search if the user is satisfied with the result of the search, otherwise the method comprising:

20 a3) receiving at least one other reference multimedia data selected from among the resultant images of the search, wherein said at least one other reference multimedia data is determined to be similar to the specified multimedia data;

25 b3) measuring the similarities of features included in said reference multimedia data and said at least one other reference multimedia data;

c3) determining and updating weights of each feature according to the measured similarities of the features in b3);

d3) measuring the similarities of the feature elements in each feature included in said reference multimedia data and said at least one other reference multimedia data;

e3) determining and updating weights of each feature elements in respective features according to the measured similarities of the feature elements in d3); and

f3) re-searching for the specified multimedia data utilizing features and feature elements included in said reference multimedia data and in said at least one other reference multimedia data, in consideration of the updated features weights in c3) and feature element weights in e3).

9. A method of claim 8, further comprising:

g3) receiving at least one dissimilar multimedia data selected from among the resultant images of the search, wherein said at least one dissimilar multimedia data is determined to be dissimilar to the specified multimedia data;

h3) measuring the dissimilarities of features included in said reference multimedia data and said at least one dissimilar multimedia data;

i3) measuring the dissimilarities of the feature elements in each feature included in said reference multimedia data and said at least one dissimilar multimedia data; and

wherein in c3) determining and updating weights of each feature elements in respective features according to the measured dissimilarities of the feature elements in b3) and h3);

5 wherein in e3) determining and updating weights of each feature elements in respective features according to the measured dissimilarities of the feature elements in d3) and i3); and

wherein in f3) re-searching for the specified multimedia data utilizing features and feature elements included in said reference multimedia data, in said at least one other reference multimedia data and in said at least one dissimilar data, in consideration of the updated features weights in c3) and feature element weights in e3).

10. A method of claim 7, further comprising terminating the search if the user is satisfied with the result of the search, otherwise the method comprising:

20 a4) receiving at least one dissimilar data multimedia data selected from among the resultant images of the search, wherein said at least one dissimilar data multimedia data is determined to be dissimilar to the specified multimedia data;

b4) measuring the dissimilarities of features included in said reference multimedia data and said at least one dissimilar data multimedia data;

25 c4) determining and updating weights of each feature according to the measured dissimilarities of the features in b4);

d4) measuring the dissimilarities of the feature elements in each feature included in said reference multimedia data and said at least one dissimilar data multimedia data;

5 e4) determining and updating weights of each feature elements in respective features according to the measured dissimilarities of the feature elements in d4); and

f4) re-searching for the specified multimedia data utilizing features and feature elements included in the plurality of reference multimedia data and in said at least one dissimilar data multimedia data, in consideration of the updated features weights in c4) and feature element weights in e4).

11. A method of claim 2, wherein the feature is a color and the feature element weights are determined either by a color histogram with n color elements as the feature elements, or by dividing a multimedia data into n*m grid regions and utilizing a regional color histogram or a color representing a grid region as the feature elements.

20 12. A method of claim 11, wherein a feature element with a feature element weight greater than a specified threshold value are utilized in the search.

Sub A3 13. A data structure comprising:

25 a feature information including feature and feature elements

of an image; and

a weight information including weight information of said features and weight information of said feature elements.

5 14. A method of claim 13, wherein the feature and the feature elements are represented by an image characteristic structure comprising:

a global information which represents a feature of a whole image; and

10 a spatial information which represents a feature of an image region.

15 15. A method of claim 14, wherein the image characteristic structure further comprises a weight information which represents the importance of the global information and the spatial information.

20 16. A method of claim 15, wherein the global information includes global feature descriptors of the whole image and element weight descriptors for the feature elements of the respective global feature descriptors, and wherein the spatial information includes spatial feature descriptors of image regions and position weight descriptors for respective image region.

25 17. A method of claim 14, wherein the global information

includes global feature descriptors of the whole image and a weight information which represents the importance of the global feature descriptors and the importance of feature elements of the respective global feature descriptors; and the spatial information includes spatial feature descriptors of image regions and a weight information which represents importance of the respective image regions

18. A method of claim 13, wherein the feature and the feature elements are represented by an image characteristic structure comprising:

- a global information;
- a local information; and
- a local position information.

19. A method of claim 18, wherein the features are color and texture and wherein the global information includes a global color feature unit and a global texture feature unit; the local information includes a local color feature unit, a local texture feature and a local color and texture feature unit; and the local position information includes a local position color feature unit and a local position texture feature unit.

20. A method of claim 19, wherein the global color feature unit is represented by a global color histogram, the global texture

feature unit is represented by a global texture histogram, the local color feature unit and the local position color feature unit are represented by a color image grid 1012, the local texture feature unit and the local position texture feature unit are represented by a texture image grid and the local color and texture feature unit is represented by both the color image grid and the texture image grid.

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